Special Issue

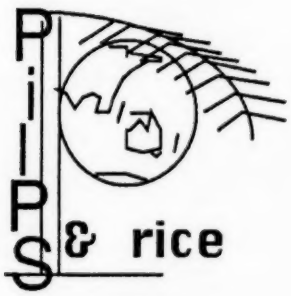
Soil Moisture Simulation

Selected papers from the RICE and PILPS Moisture Workshop held
at Macquarie University, Sydney, Australia in November, 1994
(sponsored by IGBP/GAIM and WCRP/GEWEX)

Edited by

Ann Henderson-Sellers

Climatic Impacts Centre, Macquarie University, Sydney, NSW, Australia
(Present address: Royal Melbourne Institute of Technology,
GPO Box 71, Bundoora, Vic. 3083, Australia)



Regional Interactions of Climate & Ecosystems (IGBP)

Project for Intercomparison of Landsurface Parameterization Schemes (WCRP)

CONTENTS

Editorial 1
Soil moisture: A critical focus for global change studies
A. Henderson-Sellers 3
Validation of soil moisture simulation in landsurface parameterisation schemes with HAPEX data
Y. Shao and A. Henderson-Sellers 11
Analysis of the relationship between bare soil evaporation and soil moisture simulated by 13 land surface schemes for a simple non-vegetated site
C.E. Desborough, A.J. Pitman and P. Irannejad 47
Modeling vadose zone liquid water fluxes: Infiltration, runoff, drainage, interflow
P.J. Wetzel, X. Liang, P. Irannejad, A. Boone, J. Noilhan, Y. Shao, C. Skelly, Y. Xue and Z.L. Yang 57
Analysis of transpiration results from the RICE and PILPS Workshop
J.-F. Mahfouf, C. Ciret, A. Ducharne, P. Irannejad, J. Noilhan, Y. Shao, P. Thornton, Y. Xue and Z.-L. Yang 73
Ecosystem sensitivity to land-surface models and leaf area index
W.J. Parton, A. Haxeltine, P. Thornton, R. Anne and M. Hartman 89
Soil moisture simulation: Achievements of the RICE and PILPS intercomparison workshop and future directions
A. Henderson-Sellers 99

(Contents continued on next page)

(Contents continued)

Description of the Biosphere–Atmosphere Transfer Scheme (BATS) for the Soil Moisture Workshop and evaluation of its performance
Z.-L. Yang and R.E. Dickinson 117
Brief description of bare essentials of surface transfer and results from simulations with the HAPEX–MOBILHY data
A.J. Pitman and C.E. Desborough 135
The ISBA land surface parameterisation scheme
J. Noilhan and J.-F. Mahfouf 145
Issues related to low resolution modeling of soil moisture: experience with the PLACE model
A. Boone and P.J. Wetzel 161
SSiB and its sensitivity to soil properties—a case study using HAPEX-Mobilhy data
Y. Xue, F.J. Zeng and C.A. Schlosser 183
Surface soil moisture parameterization of the VIC-2L model: Evaluation and modification
X. Liang, E.F. Wood and D.P. Lettenmaier 195
Description of a land–air parameterization scheme (LAPS)
D.T. Mihailović 207
A standard format for reporting PILPS experiments
J. Polcher and Y. Shao 217

Acronyms

IGBP – International Geosphere Biosphere Programme
GAIM – Global Analysis, Integration & Modelling
WCRP – World Climate Research Programme
GEWEX – Global Energy & Water Cycle Experiment
RICE – Regional Interactions of Climate & Ecosystems
PILPS – Project for Intercomparison of Landsurface Parameterisation Schemes